

Two New Species in the Hawaiian Endemic Genus *Dubautia* (Compositae)¹

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ABSTRACT: Two species of the Hawaiian genus *Dubautia* (subgenus *Raillardiaster*) are described as new. *Dubautia herbstobatae* ($n = 13$) is from Ohikilolo Ridge in the Waianae Mountains of Oahu; *D. waianapanapaensis* ($n = 13$) is from the upper Hana rain forest on Haleakala, Maui.

TWO NOVEL MEMBERS of the genus *Dubautia* (subgenus *Raillardiaster* St. John) have come to my attention as a result of bio-systematic investigations in the Hawaiian silversword alliance. In order to have the names available for use in a forthcoming paper on the cytology of this group, the species are being described here for the first time.

Dubautia herbstobatae G. D. Carr, sp. nov.

Figure 1

A specibus in subgenero *Raillardiaster* St. John differt in statura minus 5 dm altis et foliis coriaceis anguste ellipticis glabris supra lucidis et cupulis receptaculi cinereo-sericeis eglandulosis et achaeneis sericeis.

Fruticose, spreading, usually less than 5 dm tall; vegetative stems with a fringe of trichomes bordering the leaf scars, otherwise glabrous; flowering stems hispidulous-tomentose. Leaves mostly opposite, sessile, coriaceous, 3–11 mm wide, 20–55 mm long; narrowly elliptic; obscurely three-nerved; dark green and shiny above, paler below, glabrous on both surfaces; apex narrowly acute; margins often with 1–6 very shallow, remote serrations. Capitula disposed in an open racemose to paniculate capitulescence of 5–15 heads on slender, hispidulous-tomentose peduncles 2–25 mm long; phyl-

laries and ray flowers lacking; receptacular cup comprised of 4–11 laterally coalesced bracts about 5–9 mm high, cinereosericeous; disk flowers about 4–20, corolla mostly 3–5 mm long, yellow-orange, anthers dark purple, achenes mostly 4–6 mm long, sericeous, pappus plumose, about 4–5.5 mm long, slightly exceeding the disk corolla. Chromosome number $n = 13$.

Distribution

Known from only about 100 plants, which are very localized on exposed, dry north-facing slopes of Ohikilolo Ridge, about 600–925 m elevation, Makua Keaau Forest Reserve, Waianae Mountains, Oahu, Hawaii.

Type

Hawaii, Oahu: Makua Keaau Forest Reserve, Ohikilolo Ridge, 730 m elevation, 22 May 1977, Carr 997 (holotype, BISH; isotypes, HAW, NY, US).

Additional Specimen Examined

Ohikilolo Ridge, 671 m elevation, *Herbst & Obata* 5331 (BISH).

Remarks

The epithet honors Derral R. Herbst and John K. Obata, who were apparently the first to collect the species in 1971, and who, occasionally in the company of Daniel D. Palmer and others, have turned up several other botanical rarities in the Waianae Mountains of Oahu.

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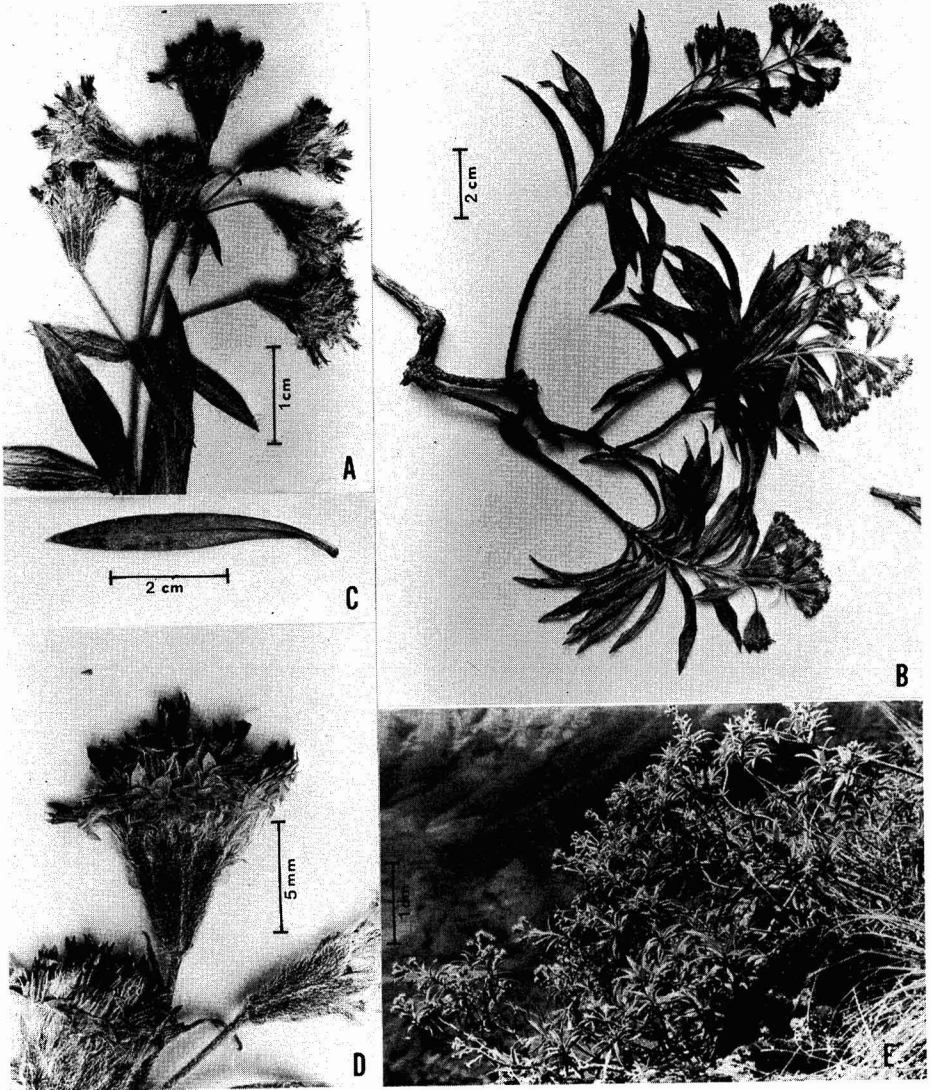


FIGURE 1. *Dubautia herbstobatae*. A, capitulescence; B, flowering shoots; C, abaxial view of leaf; D, capitula (note cinereosericeous receptacular cup); E, habit (note stature and exposure; also, note *Eragrostis* in right foreground).

This is a very distinctive species whose closest affinities are difficult to assess. It combines certain features of *Dubautia ciliolata* (DC.) Keck, *D. menziesii* (Gray) Keck, and *D. molokaiensis* (Hbd.) Keck without really closely resembling any one of them. *Dubautia herbstobatae* flowers in the spring, usually in May and June. Its chromosome number of $n = 13$ is reported here for the first time.

Dubautia waianapapaensis

G. D. Carr, sp. nov.

Figure 2

A specie *Dubautia menziesii* (Gray) Keck differt in statura altiora (1–4 m), foliis longioribus (40–120 mm) saepe supra medium latissimis basibus adpresse adscendentibus parte amplexantibus et in cupula receptaculi minus glandulosa vel eglandulosa.

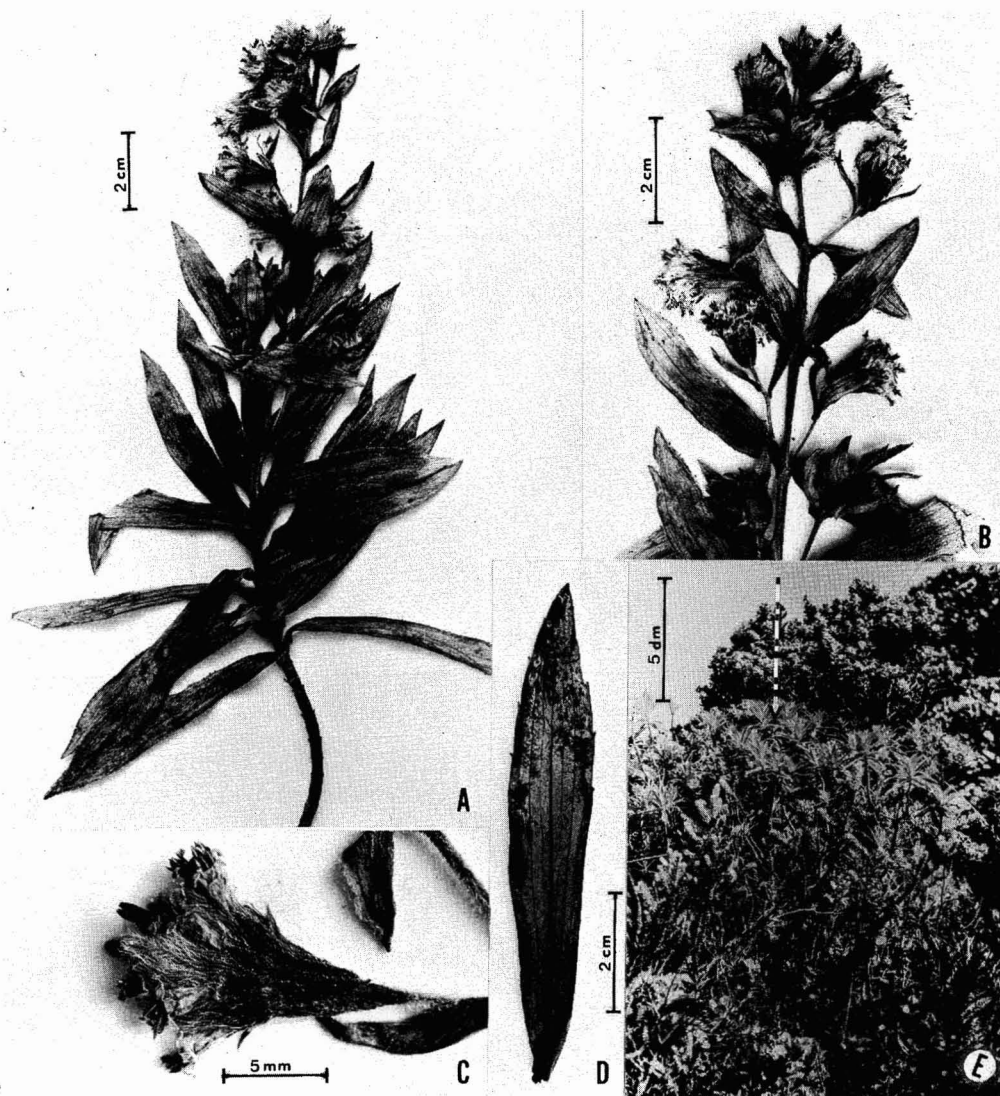


FIGURE 2. *Dubautia waianapanapaensis*. A, flowering shoot; B, capitulescence; C, capitulum; D, abaxial view of leaf (note conspicuous penniparallel venation); E, habit (note stature of *Dubautia* at arrow; also, note density of surrounding vegetation, *Styphelia*, *Vaccinium*, and *Rubus* in foreground, *Metrosideros* in background).

Erect shrub commonly 1–4 m tall; branches woody, naked below, marked by conspicuous leaf scars; vegetative stems with a fringe of trichomes bordering the leaf scars, otherwise glabrous, floral stems hispidulous-tomentose. Leaves mostly opposite, sessile; 5–22 (\bar{x} = 10) mm wide, 40–120 (\bar{x} = 65) mm long; basically linear-elliptic but usually broadest above the middle; mostly with 5–7 conspicuous penniparallel veins;

dark green above, paler below, glabrous on both surfaces; apex narrowly acute; base truncate, partly clasping, appressed, ascending; margins setose-ciliate, mostly with 5–10 remote serrations 1 mm or less in length. Capitula not or little aggregated, disposed in a racemose to paniculate capitulescence of mostly 10–30 heads on hispidulous-tomentose, glandular to eglandular peduncles 1–30 mm long; phyllaries and ray

flowers lacking; receptacular cup comprised mostly of 9–14 laterally coalesced bracts about 6–10 mm high, hispidulous to glabrous, glandular to eglandular; disk flowers about 7–30, corolla 4–7 mm long, yellow-orange, anthers dark purple, achenes mostly 4.5–6.5 mm long, glabrous or nearly so, pappus plumose, mostly 4–7 mm long, about equalling the disk corolla. Chromosome number $n = 13$.

Distribution

Known only from the upper Hana rain forest in the vicinity of Wai Anapanapa and Wai Ele'ele and along the northeast rim of Kīpahulu Valley from about 2100 m down to perhaps 1650 m, Haleakala, Maui, Hawaii.

Type

Hawaii, Maui: Haleakala, upper Hana rain forest, east side of Wai Anapanapa, 2100 m elevation, 30 August 1978, *M. Stermmernann & D. Wong s.n.* (holotype, BISH; isotypes, HAW, US).

Additional Specimens Examined

Banks of Wai Anapanapa, 22 August 1967, *DeWreede* 87 (HAW); Wai Anapanapa, 18 July 1969, *Henrickson* 3914a (BISH); near rim of Kīpahulu Valley, 6800 ft elevation, 23 September 1973, *Harrison* 487 & 492 (BISH); on trail between Wai Anapanapa and Wai Ele'ele, 25 October 1975, *Higashino* 1089 (HAW); Wai Anapanapa, 21 August 1976, *Higashino* 5020, 5022 & 5023 (HAW); first bog east of Wai Anapanapa on rim of Kīpahulu Valley, about 2085 m elevation, 1 August 1977, *Carr* 1015 (HAW); first bog northeast of Kīpahulu rim trail on trail to Wai Ele'ele, about 2055 m elevation, 1 August 1977, *Carr* 1017 (HAW); second bog east of Wai Anapanapa where trail forks to Wai Ele'ele, about 2080 m elevation, 3 August 1977, *Carr* 1028 (HAW); saddle just north of Wai Anapanapa, 5 May 1978, *Yoshinaga* 272 (HAW); Wai Anapanapa, 29 September 1978, *Peterson s.n.* (HAW).

Remarks

The epithet is derived from the Hawaiian name Wai Anapanapa meaning "sparkling water," which refers to one of the two beautiful ponds around which the species occurs.

Dubautia waianapanapaensis was apparently first collected by Robert DeWreede in a vegetative state on the first Kīpahulu Valley expedition sponsored by The Nature Conservancy. However, it was assigned incorrectly to another taxon. James Henrickson collected it again in a vegetative state and suggested that it was an undescribed taxon (Henrickson 1971). The first flowering specimen to come to my attention was that of *Higashino* 1089 (HAW).

One of the reasons it has taken so long to get enough flowering material for an adequate description is that *Dubautia waianapanapaensis* flowers from late August to perhaps mid-November at a time when few collectors enter this remote area.

Dubautia waianapanapaensis is most similar to *D. menziesii* from which it differs by having larger leaves, with the widest portion above the middle, and appressed, ascending, somewhat clasping leaf bases. It also differs by being larger in stature, less glandular or eglandular, and by occurring in a rain forest habitat.

Dubautia waianapanapaensis has been mistaken for the probable hybrid *D. menziesii* × *D. reticulata* (Sherff) Keck [*D. montana* (Mann) Keck var. *longifolia* (Sherff) Keck and var. *robustior* (Sherff) Keck] from which it differs in growth form, in the size and number of heads, and by virtue of the partly clasping, appressed, ascending leaf bases and glabrous leaves. This confusion led to an earlier report of the chromosome number of *D. waianapanapaensis* ($n = 13$) under the name *Railliardia montana* Mann var. *longifolia* Sherff (Carr 1978).

Dubautia waianapanapaensis has also been confused with *D. platyphylla* (Gray) Keck var. *leptophylla* (Sherff) Keck from which it differs markedly in leaf shape, in habit, and by virtue of the partly clasping, appressed, ascending leaf bases and more or less eglandular and nonaromatic character.

Dubautia waianapanapaensis is sympatric with *D. scabra* DC., *D. plantaginea* Gaud., and a species tentatively identified as *D. reticulata*. It hybridizes repeatedly with *D. scabra* and possibly also with *D. reticulata*. The latter possibility may explain certain intermediate individuals of difficult taxonomic disposition.

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